

AVIATION

The Oldest American Aeronautical Magazine

JANUARY 16, 1928

Issued Weekly

PRICE 20 CENTS



Aerial view of the Marine flying field at Managua, Nicaragua, where Colonel Lindbergh landed.

VOLUME
XXIV

Special Features

The Sikorsky "Guardian"
The 1928 Reliability Tour
The Brown Mercury Monoplane

NUMBER
3

AVIATION PUBLISHING CORPORATION
250 WEST 57 STREET, NEW YORK

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Publication Office, Highland, N. Y. Entered as Second-Class Matter, Nov. 22, 1920, at the Post Office, at Highland, N. Y. under Act of March 3, 1879.

We review 1927

Some of the more important air events of the past year in which Mobiloil was used



Mobiloil Flights in 1927

1. Jan 24th - Jan 26th. 1st Postal Group. Winter flight over Canada.
2. Nov 24, 1926 - Jan 27, 1927. Major Dumas, Paris-Madison, N.Y.
3. April. Major Miller, Around Union of South Africa.
4. May 1926. 12th. Col. Lindbergh, San Diego-New York.
5. May 26th. 21st. Col. Lindbergh, New York-Paris.
6. June 19th. 7th. Capt. C. K. Keesler, South and C. T. P. U.S. Around Australia.
7. June 27th. July 15th. Ford Reliability Tour (78.9% of engine-used Mobiloil).
8. June 28th. 29th. U. S. Army Fleet, San Francisco-Honolulu.
9. July 20. Oct 23rd. Col. Lindbergh, U. S. Tour.
10. July 27th. 1st. Japanese Fleet. Around Japan.
11. Aug 8th. Sept 4th. Col. Shala, Prague-Tokyo.
12. Aug 16th. 17th. "Am" Goshel, San Francisco-Honolulu (Duke Price Winner).
13. Sept 19th. 21st. Charles W. Meyers and others, New York-Spokane (Winner Class B).
14. Sept 21st. Sept 24th. National Air Races (72.9% of engine-used Mobiloil). Spokane.

NOTE

Since this map was prepared Col. Lindbergh has flown from Washington to Mexico City. As usual, he used Mobiloil.

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Tour of Europe (5,400 miles) in 18 hours elapsed time, by Arnold and Cond (450 hp. engine)

Ti moue Tikiu Marone (11,500 miles) in 120 hours by Lecomte and Delvaux (450 hp. engine)

Peter Poles (6,500 miles) in 6 days, by Pelletier-Ducy and Cond (450 hp. engine)

Tour of the Eastern Mediterranean (7,750 miles) in 41 hours 50 minutes elapsed time, by Pelletier-Ducy and Goss (450 hp. engine)

Swiss crossing at South Atlantic, by Bernotte de Bern (450 hp. engine)

Peter Dooling-Selgrade (6,000 miles) in 40 flying hours by Dooling and Selgrade (450 hp. engine)

Tour of Eastern Europe (5,400 miles) in 7 days by Major Wren and Assistant (450 hp. engine)

Crossing of Mediterranean (6,000 miles) in 6 days by Pelletier-Ducy and Goss (450 hp. engine)

Captain Machin, 1925 (Captain Pelletier-Ducy), 1927 (Captain Chérel)

Captain Bessier, 1925 (Adjutant Nohet), 1926 (Adjutant Duvion)

Surface Range Exp 1926 and 1927

Water Cooled Aviation Engines

400 hp. (12 cylinders arranged in V's 1,120 hp. (12 cylinders arranged in W) direct drive or geared, 400 hp. (12 cylinders arranged in W), 600 hp. (18 cylinders arranged in W's, either direct or geared drive

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DOING SOMETHING ABOUT THE WEATHER

MR. TWIN once remarked that everybody talked about the weather but nobody had ever done anything about it.

It seems to us there are two ways of looking at this weather business. You can try to change the weather—which is silly, or you can change the things the weather affects so that the effect will be different—preferably better.

That's what we're working on with the Ford 11-motor transport monoplane. It's built for air line operation on fixed schedules. Consequently, we aim to build the Ford airplane so reliable, so powerful, so capable that such an "weather" is thing weather for it.

And Ford airplanes are flying so a matter of course today in weather that was regarded as impossible but a short time ago. They are "getting through" when all other forms of transportation are stopped dead—when railroad trains are held up by snow-drifts when shipping is frozen in tight when

the roads are closed and even city traffic barely crawls. They are "getting through"—and piling up a great record of safe and continuous operation!

In addition to the development of airplane structure and design, we have done a great deal of experimental work with the radio beacon, and have found it sufficiently dependable in practical tests and in dark flying to warrant the belief that much of the danger from fog has been overcome by it. The results of this work are available to all airline operators who desire them.

As a consequence we believe we have most decidedly done something about the weather. And operators of Ford 11-motor monoplanes are in a position to take full advantage of it.

Write direct to us for any information you may desire.

300 West Anthony St.
DETROIT, MI. FORD MOTOR COMPANY
Dearborn, Michigan



The Oldest American Aeronautical Magazine

Vol. XXIV

JANUARY 16, 1935

No. 3

Quiet and Comfort

THERE ARE certain refinements which are indispensable and essential in the early stages of any development, but which later become an absolute necessity. A typical example in the matter of running passenger routes. Imagine the streets of today if automobiles were not fitted with mufflers. Imagine the din at intersections if planes continued to be as noisy as they are today.

The manufacturer who first brings out a plane which is really quiet and in which one can talk without raising one's voice will have an enormous selling advantage over his competitors. He will almost surely have no rivals in the future but the initial advantage which he has gained will be hard to catch up on. There will be the question of the public. The designer can be which surrounds the flight of many planes does not tend to increase their popularity and to those on the ground and around flying fields the fact that a certain make of plane is not noisy will be an excellent sales argument.

In fact manufacturers have considered mufflers as being, showing an resistance and as detracting from the power of the engine. All these arguments are to some extent true but in fact there has been comparatively little experimenting in this direction and very little improvement by manufacturers of planes for those who are trying to solve the problem. The development of planes has reached a point where refinements have become almost a necessity and the manufacturer who first produces a quiet plane will find that he has created an enormous amount of good will for his product.

Keep Them Clean

CLOTHES DO not make the man and neither does a comparatively neat coat and pant make the airplane. However, in both cases appearances count for something and it seems quite logical that the "well dressed" airplane will tend to create a favorable impression in the mind of the layman. No one is particularly fond of seeing clothes spotted with dirt and grease whether it be on a man or on a motor car, airplane or trailer. There is much chance of an air liner getting their clothes dirty. When planes, just like the cabins are brushed and cleaned and then, but unfortunately airplane engines have a habit of spattering oil on the wings and other parts of the fuselage and unless it is cleaned off as soon as possible the passenger is very likely to pick up a cold if while sitting in an air bath which is not really so healthy.

Flying Field Safety

WITH THE increased popularity of airports as a place where citizens may obtain joy, hope, and a place to visit on Sundays and holidays, a condition is arising which if not taken care of in the near future may have serious results. The condition referred to is the growing habit of civilians, and unfortunately a few of the new pilots, to use the flying field as a short cut to get from one point to another. And added to that, the other disregard of life and limb in an effort to obtain a close up view of some plane that is having its engine tested up preparatory to taking off.

The latter condition might be remedied by flying field operators enforcing the observance of a "danger line" systematically placed about all planes with engines running. And the matter of trespassing on the field by those not entitled to do so must be taken care of by fencing in the entire field. Perhaps such an undertaking would incur considerable expense, but it is quite probable that future air depots will be enclosed after a manner similar to the enclosing of railroad tracks. To fence off popular flying fields now would be a step towards the ideal air depot and during the interim it would keep civilians off the field, to say nothing of stray dogs and cats, and in some localities livestock.

Flying Field Information

ALTHOUGH THERE is no standard set of flying field laws now being universally adopted, certain individual fields throughout the country have their own particular regulations that must be complied with by pilots flying in that locality. In many cases the visiting pilot is not aware of the rules in force at the field he is visiting and as a consequence assumes against unknowing infractions of rules by visiting pilots it might prove worthwhile for field operators to make sure that visiting pilots are informed of the existing rules of their particular field.

This might be done in the form of a printed sheet that is given to each new pilot that lands. Not only could such a sheet, or pamphlet, contain the field rules, but it could also contain information as to hourly rental charges, fuel prices, service charges and other information that might prove useful to the aerial traveler. And as a suggestion toward helping to defray the expense of preparing such written material it might be possible for field operators to make some sort of an arrangement with the management of the local hotel whereby a certain amount of space was donated to advertisement that establishment.



Front view of the Brown Mongoose scapulae covered with hairs 62 kg. Arrows indicate

Brown Mercury Monoplane

A Light Three Place Plane That is Powered by Three 60 Hp.
Anzani Engines and Has a High Speed of 120 M.P.H.

By CHARLES F. MCKEYNOLDS

THUGHT TO be the only light three-engined plane in the world, the "City of Angels", first model of the Brown Mercury tri-engined monoplane, has been most spectacularly test flown in Southern California for the past two and a half months.

This plane, designed by Larry Brown, and produced by the Brown Mercury Aircraft Corp. of Los Angeles, provides the small operator, business, man or sporting enthusiast with a de luxe three place craft possessed of all the dependability for which the great tri-engine commercial planes now in service are famous.

Perched with three 60 mph. Anasas captures the City of the Angels but shows a head speed of 139 mph, a cruising speed of 100 mph, and a landing speed of 40 mph. Due to the comparatively low cost of power the machine is pleasantly quiet in the air and, according to Larry Brown, is of such stability that it will not spin. The plane will do and stand on any two engines, has a remarkably quick take off and landing rate of 1000 ft., and will even operate the inside engine, while the outside engine falls, throatled, within a three hundred foot arc.

The phase is of non-structural construction throughout and conforms everywhere with the requirements of the Department of Commerce regulations. The fuselage is of welded steel tube construction, wire braced, the wing structure is of wood and all flat surfaces are of welded steel tube construction. The undercarriage is of the Fokker type, the compression strut carrying a veeed rubber and shock absorbing unit extending from each wheel to the lower flange of the rigid main wing above.

The fuselage is of the open cockpit type, perfectly streamlined and unusually roomy for two passengers, luggage and pilot. The passenger cockpit is placed beneath the wing and

the pilot's cockpit to the rear. Both cockpits are laminated, spherulized and completely protected from the air stream by a swept wing shield. Welded steel take steps and a large door make access to the passenger cockpit easy. The pilot cockpit is fitted with the conventional stick and pedal controls, all controls being cable operated, and all instruments consequently grouped before the pilot on a hinged bar.

The fastings, of standard welded steel tube construction, were hinged except at the passenger compartment and engine mount where the rigid Warren truss is used. All tubing is treated inside and out as a protection against corrosion.

All three engines are carried on common welded steel trunnions and are easily accessible. The simplicity of the entire



Showing an inflated repair bill that is almost double
 January the owner's oil pump's

January 15, 1968

AVIATION

Figure 2. If of very compact and streamlined form, such as the two- or only the oil supply for that engine. These outboard engines are mounted on a double tripod structure of aluminum steel tubing extending to upper and lower longer or, with various wing fittings and the fittings on the struts, the air wing sections where the compression strut of the piston is attached.

The hive is built in three sections, the middle section being secured to a struts in the upper luncheon, and the two outer sections being supported by two streamlined struts in the lower luncheon fittings. The wing structure is conventional, both parts being of spruce, of built up I section. The ribs are built up with spruce capstrips and webs. The leading edge is plywood reinforced in front of the forward spar. The top flange in the wing are taken up by double wire bracing. There are three gas tanks, each of 26 gal. capacity, arranged in the center section which is cut away above the pilot's waist.

Wing Curve Known as Bowyer No. 5

The wing curve used is known as the Brown No. 5 and is designed by Larry Brown. It gives a wing of high clearance and great stability, the wing opening position of the plane being chiefly due to this wing curve. All essential features are here and well considered.

The nice fast speed of the landing gear is of great help coming over rough ground or in making difficult landings. It weighs only 30 x 5 in. is streamlined and each side is of hot treated steel tubing painted at warp about filling on low temperature. The tail skid is of steel tubing with walled rubber and absorber most earned within the tail structure.

The general specifications and performance figures for the New Mercury Tri-Ringroad Monoplane, as supplied to Avon by the manufacturer, are as follows:

Height	1.70 m	55 in.
Weight	68 kg	150 lb
Age	41 yr	6 yr
Gender	Male	6 yr 7 mo
Wing area	2600 sq. ft.	
Aspect ratio	6.3	
Infat.	Heavy	50
Infat. of condition	3 deg	
Weight bank	1000	1000
Infat.	1000	1000
Goal of 1000000	9 ft	
Ring loading	11.3 lb per sq. ft.	

*Old view of the Boston
Museum Three exposed
airplane "City of
Angels"*

Power landing	38.2 lb. per hp
Power plant	Three 90 hp Anzani 1920 model engines
Pump capacity	75 gpm
Oil capacity	72 gal.
Weight empty	22,522 lb.
Weight loaded	14,850 lb.
Pay load (exclusive of fuel and fuel)	600 lb.
Seating capacity	5
High speed	3
Climb speed	180 m.p.h.
Landing speed	40 m.p.h.
Service ceiling (loaded)	14,000 ft.
Range at cruise speed	1,400 mi.

Lawrence W. Brown, designer of this light three engine monoplane, has been actively connected with the aeronautical industry since 1913, when he first took on Brown and the



Star quarter view of the Brown Mercury monoplane "City of Angels".

brother of Gen. L. Martin, in Los Angeles. He was later Chief of Air Services for General Cofres, now president of Mexico. For several years he was test pilot for the Standard Aircraft Corporation at Plattsfield, N. J., and later was aviation test pilot for the U. S. Army Air Service at Dayton. In 1931 he becomes supervisor of construction in the Mexican Government Aircraft plant at Mexico City, a factory employing about 300 men. Some time later he was doing the first reconnaissance flights over ports for the Republic of Mexico for the Central American. On his return to Los Angeles three years ago he resumes the design and construction of monoplane which followed the same approved engineering practices.

The first plane built by Lundy Brown is now a feature of the L. A. Airways field and attracts thousands of visitors to the airport on week ends because of its clean lines and remarkable performance. This plane is a two place, OX-5 modified, pursuit type monoplane; the chief qualities of which

and the others will have and the fact that it will not open. The "City of Angels," best of the new light three-seater plane, is a direct descendant of the original light personal plane that has been in constant service for the last year and a half.

The construction of the plane was made possible when Lonsdale and Co., Los Angeles stockholders, became interested in the possibilities of the aviation industry, decided that the design of Larry Brown and his assistant work on their own machine made his project one of national merit, and forthwith raised the financial backing which resulted in the formation of the Brown-Mercery Aircraft Corp. Lonsdale and Co. are brokers of long standing in Los Angeles and are



Close up of the three 65 hp. Anson engine installed in the "City of Angels."

the first to definitely choose the field of aviation over other in which to operate. Mr. Lonsdale is an ardent aviation enthusiast and has consistently been interested in the industry. It is in the interest of the company to complete the promotion of the Brown-Mercery Aircraft Corp. and in the future to obtain backing for every legitimate aeronautical enterprise in this country.

Soon after Mr. Lonsdale became interested in the Larry Brown project he was able to obtain the financial backing of a group of prominent Los Angeles men and the Brown-Mercery Aircraft Corp. was formed with an initial capitalization of \$120,000.00. Others of this company were named as Edward H. Shupe, president, vice-president and general manager, Lawrence W. Brown, and L. G. Peterson, treasurer and secretary.

The Brown-Mercery factory at 1172 E. Shannon Ave. has been in the nature of an experimental plant, three planes having been constructed there, and the company will soon move into one space which will make possible a production of two planes per week. The original C-32-3 equipped monoplane, the new three-seater monoplane, and the latest single engine monoplane have all been constructed at the Shannon Ave. experimental plant.

Twenty-five Members Organize Royal Oak, Mich., Flying Club

A FLYING club was organized recently by aviation enthusiasts at and around Royal Oak, Mich., a suburb of Detroit. Twenty-five charter members have drawn a constitution and by laws and elected officers. Plans for the purchase of a plane and employment of a pilot are under way.

Officers elected were: Thomas E. Carroll, president of Royal Oak's police department, president, and John Watkins, of Pleasant Ridge, secretary.

Chamberlin Aeronautical Corp. to Manufacture Planes and Engines

CLARENCE CHAMBERLIN recently announced his plan to manufacture airplanes and engines and such is the kind of support. The Chamberlin Aeronautical Corp. will be organized and now has under construction at the Hudson Products Co., Garden City, L. I., N. Y., both an airplane hangar and a factory. Upon completion of the plant Chamberlin plans to make a tour of the United States, to select one or both of the places. Besides being an airplane designer for the airplanes, Chamberlin will install in the trans-Atlantic flight and endeavor to establish flying schools, flying clubs and airports throughout the country. The plant will be fitted with detachable engine mounts so that a number of different engines may be used for experimental purposes. It is planned to use, for the present, a few cylinder Brown-Mercery engine, a three cylinder Lonsdale, and a six cylinder Corson.

Hosted Small Plane in Hoboken, N. J.

In addition to the experimental work at the Kirkham plant Chamberlin has rented a small place in Hoboken, N. J., for development of various parts and fixtures, and at the same time the site could make production. After being offered here from a number of large cities asking Chamberlin to locate his main factory there. However, Chamberlin decided to do his experimental work at the Kirkham plant and build his parts in the Hoboken factory which occupies a large factory for the manufacture of airplanes and engines on a production basis. The greater part of the development and experimental work will be completed during his tour of the country.

The planes will both be small two place open cockpit two with wood wings and welded steel fuselages. It is hoped they will be very similar to the modified Farnam with its Brown-Mercery engine that Chamberlin has been using lately. This modified Farnam has taken off on a take-off 60 ft. and landed in 75 ft. According to Chamberlin, the under control after the stall and it is possible to land in 10 ft. planes after stalling point. Evidently the aircraft has a very flat lift curve at the stall point so that the plane does not stall until some time after the stall point has been reached.

By the time Chamberlin expects to give the plane, available in actual service under all conditions. The three small engines will be used, but it is expected that the jet engine engine will be built by a subsidiary company of the Chamberlin Aeronautical Corp. and designed by Charles F. Allen, president of the Kirkham Products Co. The company also has designed under the engineering supervision of Mr. Kirkham.

First Delivery of Bach Planes For West Coast Due This Month

THE FIRST of the 50 Bach airplanes, which the Western Air Transport Company plans to use in passenger and freight service between Seattle and Los Angeles will be delivered this month. Charles V. Bach, president of the company, is supervising installation of engines.

The company anticipates the addition of four more airplanes and southern Oregon and southern Washington State routes will be added to the branches.

Charles Linsmeier, young Oregon pilot, plans to open flying school in partnership with Robert Fumister in Oregan, Ore.

Progress of Civil Aviation In Australia

Pioneering Effort Has at Last Resulted in Government Recognition

By J. G. GILBERT-LORDE

Executive Director, United States of Australia

SINCE THE inauguration of the Civil Aviation Department of the Commonwealth Government six or seven years ago, a great and progressive development has taken place. But a decidedly small personnel and limited facilities, this state of the service has changed its scope and scope more and more as the Federal service.

For years the officials, headed by Lieutenant Colonel Broad, have been hoping against hope that the Government could do something in a really practical way to extend their activities and make fuller use of the very excellent and extensive staff, and at last it looks as if something is really going to happen. There is no country in the world where air services are so essential as in Australia, and no country where such is so essential as in Australia, and no country where such is so essential as in Australia.

Up to date, with a comparatively limited air service, extending the area of the country, the Civil air service has been over a million miles and per cent, 12,000 passengers have been sent on a million miles and accumulated 12,000 flights. The scope of the air service actually functioning in Australia at the time of writing, is between three and four thousand miles. Contact requires are being made of the officials of the Department by some leading expert advice to the advantage of extending air routes which information is also constantly given but their efforts have been vainly sought for lack of support from the Government.

Airline to be 1200 Mi. Long

Of this it is to be changed. Recently, leaders were of the a submarine air service from Adelaide to Port Melbourne, recently known as the transcontinental route. The company submitted a total of 33 proposals and after several considerations by the officials of the Department, it was decided to result leaders on a more definite basis. When the airline is inaugurated it will represent a distance of 1200 miles to be covered in a maximum of 24 hours against the true time of 75 days schedule time but more generally it takes ten days.

Mr. E. H. the Prime Minister, having at last realized the possibility of still aviation, has now got forward for the solution of it. The Cabinet, a most comprehensive meeting, has entered the air routes of the Commonwealth. This proposal, passed, will reduce the present time taken by the airline in maximum saving of time when compared with the old route. This scheme involves an air route to connect the capital cities of the Commonwealth connecting for the moment, Robert (Tasmania). Additionally, air routes

will be started from various points in the Northern Territory and over to Queensland, as well as additional routes over in West Australia.

Special attention will be paid to the Melbourne, Sydney, Canberra service and although it is recognized and admitted that at first they would not be a most economical proposition, nevertheless with subsidization in the Civil Aviation Department it could be made in at least part of way, as an example. The Government having gone into the whole question very carefully, is now satisfied that the time has arrived when such efforts should be made by them to make Civil Aviation



View from the cockpit of the Kirkham Flying School plane, 1932.

has been brought in a public and progressive, it has more or less in the United States, Great Britain, Germany, etc. The project cannot grant to the Department to £200,000 (about £100,000.00) of which half is devoted to subsidizing and another half to the purchase of the aircraft. The Government is approved of, this figure will be increased to £200,000 (about \$245,500.00). This large amount may be first against unanticipated but it will be and the considerably increasing, not only the mileage of the existing lines but the expanding new services.

The building of aircraft in Australia is in a very primitive state. Experimental work is required to correct construction has not followed any definite line but with the advent of these new services the time has arrived when something definite should and must be done. Australia is essentially a flying man's paradise, with its wide open spaces, mountains, and long distances from center to center. She has lagged behind other countries for too long but now it looks as if it is time to be redress long.

The 1928 Reliability Tour

Present Plans Indicate That About 40 Entries Will Start the 6000 Mile Tour From the Ford Airport on June 30

AMERICA'S PREMIER commercial airplane class in 1928, the National Reliability Tour, will have planes entered by approximately 40 manufacturers, it is presently made Ray Cooper, of Detroit, manager of the tour, has told.

The manufacturers who have indicated their intention of entering planes in the tour, Mr. Cooper said, include practically all of the larger airplane manufacturing companies of the country and many of the smaller ones. The list includes many new companies, who never before have taken part in the event. The route this year, which is, as yet, only tentatively decided upon, will take the planes through the north and southwest to the extreme western portion of the west coast, thence along the coast to Spokane, Wash., after which a return will be made through the northwest states to Detroit. The schedule calls for the traversing of approximately 6,000 miles in four weeks time, or less.

Schedule Forecasts Two Night Stopovers

In accordance with ancient custom, request of pilots and manufacturers participating in last year's tour the tour management has planned a schedule allowing for a two-night stay in practically every large city visited by the planes. This will allow the makers plenty of time to demonstrate their products to visitors and prospective buyers at the various stops, thereby strutting one of the major complaints among one of a more condensed schedule.

Under the schedule now being planned upon, according to Mr. Cooper, the National Reliability Tour planes will take off from Ford Airport, Detroit, beginning at 10 A.M. Saturday, June 28, Indianapolis, Ind., probably will be the first stop. After leaving Indianapolis the planes will fly to Memphis, Tenn., and thence to Tulsa, Okla., arriving either in Tulsa or in the vicinity of Tulsa on July 4. A two-day stop will have to be made in either Indianapolis or Memphis, Cooper explained. From Tulsa the western and their passengers

will wing their way westward to Ft. Worth, Tex. Whether or not the tour will visit San Antonio or will fly direct to El Paso from Ft. Worth, has not been decided. After El Paso will come Phoenix, Ariz., and then the road west to San Diego, Calif. Heading north the planes will call on Los Angeles, San Francisco, and Oakland, Calif., in the same order. Thence to Portland, Ore., and Spokane, where which they will start on the second leg home, passing to San Diego, Wash., Fargo, N. D., St. Paul, Minn., and Chicago in addition to the other named, these probably will be a number of smaller stopping places along the route, Mr. Cooper said.

Expect Ideal Weather Conditions

Weather conditions over the contemplated route are expected to be ideal. The tour manager believes that the plan may be reasonably certain there will be no rain after leaving Memphis until North Dakota is left behind on the homeward flight. During the past fall Mr. Cooper, piloted by Edna Stinson, flew over the route and investigated every condition that will in any way affect the 1928 tour.

All of the entries indicated in the proposed schedule, the tour manager said, have expressed their desire to leave the ball upon them, and many more entries, that cannot possibly be listed, have asked to be included in the list.

The Tour committee on rules has decided some time to waiting until a new formula for scoring of contests is planned, Mr. Cooper said. The plan, this year, is to pay no attention to the number of passengers rather than the number of pounds and fuel consumed. Right at an airplane, flying down out of the sky, landing, and discharging from in eight passengers, leaving the plane ready for another tour in the morning, is the program, Mr. Cooper believes, than a overly arrived aircraft from which a considerable percentage of dead weight is retained.

Less stress will be laid this year on stock and no-stock use

of power on the maintenance of a set schedule. Suggestions are now made to set a definite schedule between points for each individual plane and possible the plan for any variation from the schedule.

Efficiency being made, Mr. Cooper stated, in draft a set of rules that will give a plane equipped with an engine of 150 hp., or less, an opportunity to compete favorably with

any of the higher powered competitors. The idea being to encourage the development of lower powered engines is maintained the U.S.N.

There is a probability, however, that planes in the tour will have to be divided into two or perhaps, three classes. Inasmuch as prizes offered to the winner in each class.

The Edsel B. Ford Trophy will continue to be awarded to the winner over all the planes entered in the tour, regardless of their individual character. These engines will be classified in the high-powered and low-powered plane divisions, according to the Cooper.

As to whether it will be possible for the air mail carriers to use the engines during the period that is scheduled outside of the contest.

"It was of the many types of airplane engines manufactured in the United States, and the fact that they are readily adaptable to the different models of planes, it is somewhat reasonable to assume that the situation is covered by local production. However, the matter has been given very careful consideration and it is the conclusion of this office that it would be futile to prohibit the use of an engine which may prove to be entirely feasible, regardless of the origin of manufacture."

The Department under which the air mail contracts are awarded concurs in the fact that the purpose of the act is to encourage commercial aviation. If this encouragement can be brought about in a certain degree by the use of a type of engine which will reduce the operating expense without detracting from the safety factor, the Department is of the opinion that such is in accordance with the aforementioned legislation.

Report Filing Detailed Description

"You are therefore informed that there will be no objection on the part of the Department to the plan outlined by you. However, it is desired that you file this with the Department a detailed description of the engine, and that this office be promptly informed of any material facts that might have a bearing on the same."

Mr. Ryan declared that he felt that the air mail contracts have offered an important field for the Ryan-Siemens engines and that the Post Office Department has shown that they have a very real importance in the situation of aviation industry in America. "We must have an increase of using our aircraft engines because of these low cost, their dependability and unusual small cost of operation," Mr. Ryan said.

P. O. Dept. Grants the Use of Ryan-Siemens Engines by Mail Carriers

AUTHORITY FOR the use of the Ryan-Siemens radial air-cooled engine by the air mail carriers throughout the nation, has been given by the Post Office Department at Washington, to E. Charles Ryan, president of the Ryan Aeronautical Corp. of New Dorps.

The engine, which is a product of Germany, is now distributed in the United States by the Ryan corporation and is used as propellers are completed, it will be manufactured here also, Mr. Ryan announced.

Under the Post Office Department regulations, no air mail line in the United States could use on its mail planes equipment manufactured outside of the country, because the government wants to develop American made planes, engines and parts.

Distribution Only the First Step

Now, however, to the fact that the distribution of the air engine manufactured in Germany is only the first step in the Ryan Aeronautical Corporation's program, and that the use of these engines in their manufacturing in this country under license, the Post Office officials have authorized its use on American airmail lines.

The following letter was received by Mr. Ryan from Charles O. Over, acting assistant postmaster general:

"Your letter of Oct. 7 has been received, in which you state it is the plan of your company to import and market an air cooled radial airplane engine manufactured by the Siemens & Halske Co. of Berlin, Germany, and that you further contemplate after a few months to produce these engines in your own plant under an agreement with the manufacturer. You ask whether it will be possible for the air mail carriers to use the engines during the period that is scheduled outside of the contest."

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Wright Aeronautical Corp. Gets a Large Engine Contract From Navy

A RECENT report from the Navy states that a contract has been made with the Wright Aeronautical Corp., Patterson, N. J., for 125 Wright Model J-5A air-cooled 26 hp. aircraft engines and spares at a total cost of \$877,715. These engines will be used in the observation planes of 20 types and for training planes now on hand.



A line up of some of the planes that competed in the 1928 event which was known as the Ford Tour and in 1927 event the National Reliability Tour



Front quarter view of the Sikorsky all metal night bomber "Guardian".

The Sikorsky "Guardian"

All Metal Night Bomber is Structurally Similar to the "Ville de Paris" and is Powered With Two 525 Hp. "Hornet" Engines

THE FOURTH two engine night bomber for the Army Air Corps was recently completed and flown for the first time at Curtiss and Beechcraft Field, Long Island. This all metal biplane, the "Guardian", was built by the Sikorsky Manufacturing Corp., College Point, L. I. N. Y. In cooperation with the Consolidated Aircraft Corp., Buffalo, N. Y. It is very similar in construction to the Sikorsky S-27, "Ville de Paris", built for Capt. Rene Paulin, a detailed description of which appeared in the Sept. 26, 1932, issue of AVIATION. The main difference between the two planes is the power plant and the construction of the wings. The "Guardian" is powered with two Pratt & Whitney "Hornet" 525 hp. engines between the wings, one on each side of the fuselage.

Open Section Dorsal View

The structure is entirely of metal covered with fabric. Open section dorsals are used almost exclusively with the exception of the leading gear and a few steel fittings. The lower wing is somewhat shorter than the upper one with the consequent interplane struts at an angle. Thus the lower wing might be considered primarily as a structural member supporting a long upper wing. The upper wing has an exceptionally high aspect ratio of 13.9 or it has a span of 108 ft. with a chord of only 5 ft. 4 in.

Preliminary flight tests were recently made by Lt. Col. Leigh Wade one of the Army's best test pilots. He found the first test was made by the Army at Wright Field, Dayton, O. The plane has been designed to have a high speed of 125 m.p.h. with a landing speed of 57 m.p.h. carrying a full load of 14,600 lb. However as in the Ville de Paris the Guardian has been designed to carry a gross load of 21,000 lb. and it can be reasonably expected that the Guardian will show the same or a better performance. This performance, as with a direct drive engine. With a geared engine the performance can be materially increased. However these

figures are quite conservative as it is believed that the performance of the Ville de Paris will be exceeded. The Guardian is easily maneuvered in spite of size, and with a wing loading of 33.6 lb. per sq. ft. it climbs at 750 f.p.m. with a ceiling of 18,000 ft.

The tail surfaces of the Guardian differ from those of the Ville de Paris in that the adjustable fin has been changed and consequently the rudders have been enlarged. The



In each engine nacelle are fuel tanks for 240 gal. of petrol and 240 gal. of oil.

rudders, set in the streamlines of each propeller, are similar to an all Sikorsky two engine plane, in comparison to the side torque is one of the features of one engine. The Guardian is the same structurally as the Ville de Paris. Of course, as it is fitted as a night bomber the amount of equipment is radically different. There is a great deal of forward gear and two rear gunners, one of which is a radio operator.

The nose of the bomber is of the standard Army Air Corps

type for bombardment planes and is cut away at an angle of 35 deg. The rear cockpit there is a door that can be built of reinforced duralumin sheeting. Below the door there is a small ladder of welded aluminum tubing.

All of the concentrated loads are located close to the center of gravity. The bombs, engines and fuel tanks are so placed that the stability of the plane is almost unimpaired by a change in loading. The main fuel supply is carried in five tanks of 120 gal. each behind each engine. In addition, there are engine nacelle in the leading edge of the upper wing; there is a 35 gal. gravity tank giving a total fuel capacity of 550 gal. The tanks in the engine nacelles are semi-cylindrical in shape and form part of the streamlining of the engine. Each of the two 120 gal. tanks is divided into two compartments; 80 gal. service and 40 gal. reserve. Each compartment is fitted with a check valve and by pulling one control in the cockpit, according to the designer, the total contents of the service tanks can be dropped in about 40 sec.

In normal flight the fuel is fed into two carburetors from either the service or gravity tanks by opening a petcock at the left of the pilot's seat. Fuel can be pumped from either the service or reserve tanks into the gravity tanks by a hand pump in the cockpit. Although the plane is equipped with only one Plessey hydraulic fuel level gauge, located on the instrument board, the fuel level of any of the four service tanks can be readily ascertained by turning a corresponding handle of the manifold located beside the pump. The gravity tanks are equipped with transparent pycnometers which take sight below the tanks and indicate the fuel level.

The construction of the Guardian is almost identical to that of the Ville de Paris. The fuselage is constructed of extruded duralumin angles and "T" sections bolted and riveted together. At no point is welding used except where it is employed it is reinforced by rivets. The wings are entirely of metal covered with fabric. The metal equipped in duralumin except for floor fittings and the wireframe bracing which is of steel. The spars are of 1 section with 1/4 extruded

the air shaft of the S-27 type has a combination drive and roller shock absorber. The stabilizer is adjusted by chain and worm mechanism.

For this purpose on the right side of the fuselage, enables the bomber, who at the same time is sitting in a seat placed, is step easily from the seat to the main floor which is located on the two lower legs and extends from the nose to the bottom rear member just behind the two seats. Besides the main instrument board in the pilot's cockpit there is another small instrument board provided with an altimeter, air speed indicator and a device for communication with the pilot's cockpit. The instrument board in the pilot's cockpit is fitted with a complete set of instruments, including altimeter, air speed indicator, pilot's director, earth indicator meter and compass, magnetic compass, fuel level gauge, clock, two altimeters, two oil pressure gauges, two fuel pressure gauges, two starter switches, two magnetic switches, one engine switch, two landing light switches and the other electrical switches. Space is also provided for the installation of a flight indicator and two electrical instruments and their cables. At present mechanical instruments are located on each engine nacelle within the pilot's sight. The handles for fuel level gauges are located directly below the instrument board and the cables controlling the valves run in a wing with no pulleys or guides. In addition there are two handles on the instrument board that operate the booster pumps for each engine and also two valves for refilling the hydraulic brake system.

Separating the forward and rear cockpits is a large rectangular space containing the rack for mounting the bombs. Two fire pumps with hand operated controls are in the space and provide easy inspection and handling of explosives. To provide communication between the forward and rear cockpit, there is an 18 in. cut walk on top of the fuselage 1/4 in. to 5/8 in. on each side.

The rear cockpit contains two machine guns mounted on top of the fuselage on a sliding base. At the sides there are two steps so that the gunner is at a high elevation permitting

him to fire directly downward alongside the fuselage. At the left side of the rear cockpit there is a door that can be built of reinforced duralumin sheeting. Below the door there is a small ladder of welded aluminum tubing.

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Sikorsky wing construction typical of that on the Sikorsky Consolidated Guardian.

T section for the spars with the web of the channels riveted in the form of a Warren truss. The interplane struts are of duralumin extruded angles and tubing flared with hollow web. The struts are of the notched type and although their surface is comparatively small (12.5 sq. ft.) they are very efficient. They are mounted in the upper wing by fabric straps made up of two duralumin angles and supported by five brass bearings. Control is by cable cables inside the upper wing.

This general type of construction lends itself to large scale production besides giving a structure that can be readily inspected or repaired. However it is believed to be somewhat more expensive than welded steel tubing. The second steel

tail is known to be the strongest form under axial loads but Mr. Dornier sticks to closed sections as well as to welding in primary structure. The question of lap-joint or semi-lap-joint might be said to have been solved in an arbitrary way by the use of a large overhang on the upper wing, giving it a sort of semi-overlap construction. This makes possible an unobstructed wide space for the upper wing and gives a high aspect ratio.

The wings might be said to be of two key construction with rigging mounted on the lower interplane struts. The upper



The short absorber consists of an air buff in combination with two cushions of rubber sheet.

rigging are also supported from the fuselage by struts that might form a walk way from the fuselage to the engine for minor repairs during flight. Each engine is fitted with a Standard Steel propeller of 31 ft. diameter. Engine and head seal electric inertia starters with 50 amp-generator and 12 volt battery are used.

The manufacturer's specifications are as follows:

Length overall	45 ft.
Height overall	30 ft. 1 1/2
Span, upper wing	100 ft.
Rear, lower wing	58 ft.
Chord, upper wing	5 ft. 1 1/2
Chord, lower wing	5 ft.
Gap	16 ft. 3 in.
Area, upper wing	1,000 sq. ft.
Area, lower wing	500 sq. ft.
Angle of incidence, U. W.	3 1/2°
Angle of incidence, L. W.	3 1/2°
Sweep back conventional	10°
Rehedral	10°
Angle of plane on the ground	10°
Span, tail plane	25 ft.
Area of upper wing	375 sq. ft.
Area of lower wing	276 sq. ft.
Area of screen (total)	125 sq. ft.
Total area	1,651 sq. ft.
Efficiency	40 ft.
Stall speed	45 sq. ft.
Rolling	70 sq. ft.
Trend of wheels	13 sq. ft.
Load factor	4.5
Push distance	3.5
Low altitude	2.0
Inverted flight	2.0
Landing	0

Tail surface	38 sq. ft.
Wingtip	38 sq. ft.
Plane empty	3,000 lb.
Useful load	3,000 lb.
Maximum for normal flight	3,000 lb.
Oil for normal flight	300 lb.
Crew of five	300 lb.
Equipment (instruments, batteries & radio)	515 lb.
Non-disposable armament	415 lb.
Disposable armament	2,200 lb.
Maximum	3,100 lb.
Total useful load	4,915 lb.
Ordnance weight at normal flight	3,000 lb.
The plane can be overloaded up to 21,000 lb. at ground	
Estimated performance	
Maximum speed	100 mph
Climax speed	100-110 mph
Landing speed	57 mph
Climax	15,000 ft.
Climax at ground	15,000 ft.
Load per sq. ft.	30 lb.
Load per hp.	30 lb.

The disposition of loads chosen by the Air Corps for a light bomber makes a plane that is readily adaptable to commercial transportation. The idea of two engines, each the fuselage with the main fuel supply away from the propellers, leaves a free and unobstructed cabin that can be used for commercial transportation. One of the main advantages of the position of the cabin about the center of gravity is that so that it changes in load does not affect the balance of the plane. This was apparent in the Vire de France, which had seats in the cabin in place of a bench made with the rest of the plane vacant for baggage or additional passengers. It took much to be worked under the nose of the plane and its contents unloaded into the fuselage with very little effort.

German Report States a Dornier Plane Has Broken Eight Records

A RECENT communication from the German Dornier company states that the Dornier airplane D-D powered on a BMW 500-500 hp engine has broken eight world's records that were recently inaugurated by the F.A.S. The records are as follows:

Without useful load	
Distance 3180 km. (1,965 mi.) Richard Wagner and Georg Ziemer, Aug. 10, 1927, at Altshausen	
Speed over 3000 km. course (1,750 mi.) 172 km. per hr. (107 m.p.h.) Richard Wagner and Georg Ziemer, Aug. 10, 1927, at Altshausen	
With 500 kg. useful load	
Distance 2108 km. (1,309 mi.) Richard Wagner and Georg Ziemer, Aug. 10, 1927, at Altshausen	
Speed over 3000 km. course 172 km. per hr. (107 m.p.h.) Richard Wagner and Georg Ziemer on Aug. 10, 1927, at Altshausen	
With 1000 kg. useful load	
Distance 1600 km. (1,000 mi.) Richard Wagner and Georg Ziemer, Aug. 10, 1927, at Altshausen	
Speed over 3000 km. course 172 km. per hr. (107 m.p.h.) Richard Wagner and Georg Ziemer on Aug. 10, 1927, at Altshausen	
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Radio Buyers' Guide

The Advisability of the Operator to Make Sure That He Does Not Purchase Equipment That Infringes on Existing Patents

By LAWRENCE A. HYLAND

Radio Engineer

Article Six

THE AIRWAYS operator who decides to install radio apparatus on his craft should bear in mind the fact that nearly all radio circuits are covered by patents. Especially is this the case for aircraft radio sets. Only "some" patents and machines which employ vacuum tubes are suitable for installation in aircraft. All structural and functional characteristics of vacuum tubes have been patented upon discovery and, since the vacuum tube is a modern invention, most of these patents will remain in effect many years. The more important of the vacuum tube patents are now controlled by the group of companies interested in the Radio Corporation of America, or by the American Telephone and Telegraph Co. To infringe upon any of the patents controlled by these companies is to invite expensive litigation.

There are many manufacturers who make and sell broadcast radio receivers. Some of these deliberately infringe upon patented circuits. These patent "infringers" can continue in business as long as they are able to avoid detection by the companies who own the patents. Purchasers of "secret" receivers will be liable for being caught using such patented and patented apparatus have not been interfered with. Even the resources and good will of the Radio Corporation could not support a campaign to stop the use of hundreds of thousands of broadcast radio receivers now in homes throughout the country.

Commercial Companies in Different Circumstances

Commercial organizations which make use of radio apparatus are in different circumstances from those of the broadcast listener. In the first place the commercial concern has radio, valuable and attachable assets. Then, they are liable to profit directly by the use of radio apparatus. Finally, the fact that they have radio apparatus installed is readily ascertainable. Hence, a checking company which places an unlicensed radio transmitter on one of its fighters will quickly find itself engaged from using the infringing equipment and will consider itself lucky if a suit for damages is not brought. That the purchasers of radio apparatus are ignorant of their infringing does not relieve them from liability to injunction and damage suits.

The commercial aircraft operator is in exactly the same jeopardy as the steamship operator ignorant of radio equipment is concerned. His use of patented circuits without knowledge will not be pardoned. As far as he is concerned, the policy of the commercial radio companies will remain unchanged and so he must be careful of the use of the patented circuits controlled by the General Electric and the Westinghouse companies except on apparatus sold directly by the Radio Corporation of America.

It behooves the airways operator to investigate very carefully before purchasing a radio set from any manufacturer or agent other than the Radio Corporation.

The self-regulating propeller is another proprietary device which is thoroughly protected by patents. In this case, however, there are satisfactory means over and above the patented principles which have enabled the successful application of the self-regulating principle to the DeLamare-Gilman Model Company.

Questions are not so restricted either by patent or trade secrets. As has been pointed out before the product of reliable American generator manufacturers are sturdy and rugged but have not yet reached the degree of refinement and economy of weight which characterizes the generators of European design. With the advent of a commercial market for these aircraft generators and with the recognition of the primary requirement of efficiency in flight, it may be expected that American manufacturers will speedily improve their generators until they are on a par with foreign designs.

Make Sure of Separate Purchases

Other devices that are accessories to the aircraft radio installation may or may not be patented. If bought from the same organization that furnishes the major items of the radio installation no additional precautions need be taken to insure patent control other than the recommended course to be followed in making the major purchase. If bought as a separate item, on the other hand, care should be exercised to make sure that the vendor has the right to manufacture and sell the appliances.

Having disposed of the proprietary matters associated with the purchase of radio apparatus, the aircraft operator may proceed to the actual installations which have to do with performance and design.

Of the several methods of wiring radio sets to indicate their performance only one interests the airways operator—the reliable distance he will be able to get from the apparatus.

TABLE I Distance Rating of Radio Sets			
Transmitters	Miles	Ground	Miles
Output		Power	
15 watts	50	500 watts	50
300 watts	200	1 kilowatt	100
500 watts	300	2 kilowatts	200

Table I shows the distances to be expected from radio transmitters of various ratings, as well as the effective range of aircraft receivers when working with stations on the ground. These are telegraph ranges, the radio phone being effective over only from one fourth to one tenth these distances.

Weight is an oft-reported feature of design, and by weight is meant not only the actual radio weight of the apparatus

The SWALLOW Approved Type No. 21

The U. S. Department of Commerce has not only placed its stamp of approval on the Swallow, through the issuance of Approved Type Certificate No. 11, but has highly commended Swallow's production practices, as well as the high grade materials used in the construction of these planes. This is the best endorsement of Swallow true worthiness.



A VALUABLE DEALER FRANCHISE.

To responsible dealers, the Swallow Agency Franchise offers an exceptional money-making opportunity. Our 1931 advertising will create a bigger demand than ever for Swallow planes. In addition, our dealerships will make Swallows easier to sell. We will back our Distributors with the most complete merchandising program yet developed in commercial aviation.

Eight Years Progress . . .

SWALLOW — America's First Commercial Airplane, owes its present enviable position not only to the fact that it was first in this field — but because — through all the changes and vicissitudes which the past eight years have brought about in commercial avi-

ation — the original Swallow pointers have been proven basically right.

In daily flights ON FIVE CONTINENTS Swallows have invariably "made good." Swallow's remarkable record of over 100,000 hours without an accident in service, is the best of Swallow stannum and metal — and

AND NOW — for 1932 — the year which promises to see new heights reached in commercial aviation.

SWALLOW OFFERS

progressive, yet conservative management, and ample finances:

— a new plant, thoroughly equipped for best manufacturing, enabling us to take

advantage of every economy which modern machinery and manufacturing methods afford!

A merchandising, sales and advertising program to assist Swallow Distributors in making the biggest possible profits from their territories:

To learn all that Swallow offers — either to the prospective purchaser, or dealer, write or wire us today.

VICTOR E. BROWN, General Manager

SWALLOW AIR-
WICHITA



PLANE COMPANY
KANSAS

Year In And Year Out Consistent Performance



RYAN SIEMENS AIRPLANE ENGINES

are approved by the U. S.
Post Office Dept. for all
contract air mail lines

Ryan-Siemens Engines are built and roller bearing throughout; water cooled; come in 5, 7, and 9 cylinders; and develop 75, 100 and 135 H.P.

Prompt Delivery in any Quantity

RYAN

AERONAUTICAL
CORPORATION

San Diego, California

B. F. Mahoney Aircraft Co., to Move Its Factory to St. Louis

THE B. F. MAHONEY Aircraft Co., manufacturers of the Charles A. Lindbergh's seven opening monoplane has announced its decision to move its manufacturing plant from San Diego, Calif., to St. Louis. Negotiations have been progressing several weeks between B. F. Mahoney, president of the company, and Harold M. Dwyer, president of the Chamber of Commerce, one of the leaders of the Lindbergh fight in Peru. The matter has been under constant discussion between Dwyer and Mahoney since June.

The company's new location is to be adjacent to Lambert St. Louis Flying Field, which the city has taken over to acquire as a municipal airport. An essential part of the Bridgman airport plan was the establishment of manufacturing industries in connection with the field.

It is planned to organize a Missouri corporation, capitalized at \$500,000.00 which will acquire the company's assets. Mahoney will continue as president. The board of directors will include Phil DeC. Bell, owner of the St. Louis "Herald," Harry H. Knapp, Mr. Dwyer and Mr. Mahoney.

First Plant Cost to Cost \$50,000

The first cost of the plant, in which construction is planned to begin this month, will cost about \$50,000.00, and is intended to be ready for operation in the spring. The cost, at the beginning may be not more than nine planes a month, but this will be increased to eighteen a month. Workmen will be brought here from San Diego as soon as they are needed.

Ryan planes of the long-range type will be made at St. Louis factory. Planes of this type now are owned by J. H. Bell and Albert Van Housen of St. Louis.

Mr. Mahoney stated that his decision about coming to St. Louis had been brought about by the Lindbergh fight in the central location of St. Louis, and by the city's plan to establish a municipal airport. After completing consultations Mr. Mahoney sent the following telegram to Consul Lindbergh at Berlin, British Ambassador:

"Just announced that whereby will move plant to St. Louis next 90 days. Happy New Year. Will see you in St. Louis on your return from Cuba."

The acquisition of the Mahoney Co. is the second step of the effort of the Chamber of Commerce to bring aviation industries to St. Louis with a view of making that city the center of American flying. Establishment of the Robert C. Gurney Co., a St. Louis subsidiary of the Curtiss Aeroplane and Motor Co., was announced recently.

The Harvard Flying Club Will Re-assemble Plane in February

THE HARVARD Flying Club guaranteed its new twin Air this week at Dec. 18-19 and will re-assemble it and after the mid-year examinations in February. After the holiday recess the student team plans to overhaul the engine and the engine.

Inaugurate Two Sighting Air Routes in Los Angeles, Calif.

TWO SIGHTSEEING routes have been inaugurated in Los Angeles, one to San Diego and one to San Francisco by the American Aircraft Company. The aerial tour is now made in four-passenger Parnall monoplanes.

Harry A. Miller Mfg. Co., to Market Air Cooled 130 Hp. Engine Shortly

IT HAS been announced that the Harry A. Miller Manufacturing Co., of Los Angeles, Calif., will shortly market an air-cooled 130 hp. eight cylinder engine for aircraft use. It is said that Miller engines never hold second every racing engine record and have been in the world except for four in the outboard motorboat class. The airplane engine was designed around the Miller four cylinder engine engine, which recently set a world's record, on the 102 on its class, and is more than 17 m.p.h. faster than the previous record. The engine is a horizontal eight cylinder engine with four cylinders on each side. It is air-cooled with overhead valves operated by overhead cam shafts. Developing 130 hp. at 2600 r.p.m. it will weigh 1300 lb. and will cost \$45,000.

The engine was built by Harry A. Miller has developed quickly to 7,000 r.p.m. and any development in a high speed engine. Special alloys have been developed for these cylinders is a new type of aluminum and an improved supercharger all of which will be used on the new aviation engine. It is stated that a complete supercharger exclusively to produce these engines in quantity is now in the process of development. A factory will be occupied in the Los Angeles district, and preparations will be made to produce these engines in sufficient quantities to make the selling price of \$10,000 probable.

Reported That Italy and England Favor Biennial Schneider Races

IT IS reported that the Italian and British governments are supporting a project for amendment of the Schneider Cup rules to make future races biennial instead of annual. The United States, France, and German authorities have been informally consulted and are understood to object to the proposal. Great Britain and Italy have agreed not to support changes in the 1935 event, it is also reported, provided other nations will agree to follow the same course.

With reference to Washington say the United States should insist to agree. There is no definite answer, they point out, that America will be able to continue the participation in the Schneider races. It is stated that the Navy has withdrawn from competition definitely, and although private capital attempted to make ready a plane for 1937 race and failed only because it was not able to get prepared in time. There is no reason, it is believed, that it again will come to the rescue. If the money are made however, however, it is probable that improved plane designs will be brought into the reform between races of such importance that manufacturers will begin to place them in competition.

Geo. A. Wiles, Inc., Becomes Eastern Agent for Stearman Aircraft Co.

THE EASTERN agency for Stearman airplanes has been taken by Geo. A. Wiles, Inc., of Mineola, N. Y. The New Company maintains a branch at Curtiss Field and represents, in addition to the Stearman Aircraft Company, both Stearman and Monogram.

The O.E.S. demonstrator is expected sometime this month. As the Stearman is considered with intercontinental scope, to take any engine from an OX to a Whirlwind, without there is the balance of the plane, it is expected to convert this demonstrator to a higher power early in the spring.

The AIRSEDAN



Safety

Built under Department of Commerce Certificate of Airworthiness No. 12, Approved for 1000 lbs. payload.

INSURANCE

Full coverage will be granted for all passengers, because they cannot enter into with the controls.

SPECIFICATIONS

Seating Capacity	pilot and 4 pass
Wing Span	2100 in
Wing Area	120 sq ft
" Span	42 ft.
High Speed (sea level)	120 M.P.H.
Engine	Wright Whirlwind

EQUIPMENT

Self Starter, Metal Propeller, Compass, Air Speed Indicator, Navigation Lights, Tachometer, Altimeter, Clock, Fire Extinguisher, Fuel, Oil Pressure and Oil Temperature Gauges, Air Gages, Throttle, Strainer, and Fuel Valve, Exhaust Manifold with Muffler and Cabin Heater, Metal Mail or Baggage Compartment.

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For the
Small
Plane



Radial
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If it were just in time to replace the almost exhausted supply of war-surplus motors for the small plane, this highly perfected new model ANZANI, gummy more power with no added weight, is now available to constructors and users.

Among the improvements that will establish for the world renowned ANZANI its already new standard of economical and dependable operation for all requirements of from 15 to 120 h.p., are summarized the following:

1. Larger Valves
2. Side by side Push Rods and Cams.
3. Hressner Rubber Arms and Rubber Arm Mount.
4. Casters on Rubber Arm Pins.
5. Struts Piston and oil discharge hole in piston
6. Higher compression
7. Improved Thrust Bearings
8. Radial Ball Bearings to carry Propeller Load.
9. Double Oil Pump—Pressure and Boreage with Filter.
10. Oil Ringers on all Shafts to Prevent Leaks.
11. Latest type Ignition
12. Rigger Breathers

Pending completion of manufacturing arrangements in the United States, Mr. H. L. Brownback will remain at the ANZANI factory to supervise production. American manufacturers are thus assured of the utmost in service as regards delivery and all other factors.

Prices and details on request

BROWNBACK MOTOR LABORATORIES, Inc.
GRATEFUL BUILDINGS • NEW YORK CITY

International Aircraft Moving Its Equipment to Cincinnati, O.

WITH WESTERN airlines as hard for more than the airplane, and mid-western airlines for more than the International Aircraft Corp. of Long Beach, Cal., engaged in the colossal task of moving all its equipment to Cincinnati, O., and of keeping up to its production schedule simultaneously.

The California transportation has been supplied by Cessna, between headed by Clarence E. Ogden, of the Radio Radio Corp., together with Arthur E. Smith, retired pilot, and H. O. Tilling, and operator, as co-transporters. Transport papers have already been filed at Columbus, O., in State capital, transportation being for \$500,000, against a former transportation for \$100,000.

The first despatching plane for Cincinnati, when it was, will leave in the afternoon, when it is identified with the sub-organization, was flown from Los Angeles to Cincinnati the week before Christmas. Jeffrey Weaver, its pilot, will also be home in Cincinnati.

Buildings of Modern Construction

Among others who will change their residence in Cincinnati with the coming of the airplane factory are Albert L. Thayer, president of the Cincinnati Aircraft Sales Company, the sitting division, Perry V. Ogden, production engineer and Edwin M. Fry, airplane engineer.

All better, special metal-shaping and metal-working machinery and materials are being moved to Cincinnati as rapidly as possible, and are being installed in four new and better buildings that were built by the government during the war at Akron, the site of the new factory. The buildings are two stories in height and of modern, daylight construction. Akron is about ten miles from Cincinnati, and the property which has been taken over in the central portion of the city, embracing about 100 acres. On this ground, a six-story concrete 1,000 ft. in length and a private building will also be constructed.

It is anticipated that by Feb. 1 all machinery will have been installed, and that the thirty planes now in order will have been completed a month and a half later. The last of the fifty planes constructed for the West is now being built according to reports. Maximum production at the Akron factory was stated as being six planes a week, and this is to be increased immediately.

West Coast Air Line Announces Passenger and Express Charges

RATES EQUAL to railroad fare plus Pullman charge will be charged by the West Coast Air Transport Co., Clyde V. Eakin, president, announced recently. The company plans to put the first of its proposed string of big Dash monoplanes in service between Portland and Seattle within a short time. Rates will be as follows: Portland to Seattle, \$15 one way and \$30 round trip; Portland to San Francisco, \$45 one way and \$90 round trip; Portland to Los Angeles, \$65 with a comparative reduction as round trip.

Charges for express will be 25 cents a pound, Portland to Seattle, 50 cents, Portland to San Francisco, and 75 cents Portland to Los Angeles.

There will be short stops at Tacoma, Wash., Portland, Ore., and Corvallis, Calif. Running time between Portland and Seattle will be an hour and 15 minutes and between Portland and San Francisco, five and a half hours.

Side Slips

By ROBERT R. OSBORN

For the Reports from Side Slips' Special Correspondent in the South (Also further opinions to Mr. Bing Lardner) Daily Editor—

Mr. Bing, I still haven't been able to look over the aviation situation down here for you and the readers on account of not having the time to do so. I have been able to investigate the old and have racing situation though, on one report as to how, however unfavorable. In order that there will be no misunderstanding let me say to state that this more again is only my guest devotion to duty for which I am partly innocent. Down here some of your subscribers will be coming down here in a few days as if they have no information as to the horse and dog races as the public conditions they will say what and the horse, what kind of a correspondent did you have down here?

First let me say any statement you may have regarding this being the steady state. The can check OK but I understand from Commander Byrd that it is down at the North Pole also, as much as much as it does there. I have been order down here the week that I left NY as a fellow might as well be in Quebec or Wash, what with all the eggs around around with our staff. Everything has been up complete as the palm crop perfectly normal. I understand the city officials are plans to replace these trees with fir, which is just as soon as the ground thaws out. Yesterday I beg a new from a fellow on the indicator must have been from

when he gave it to me, at after thinking around a lot I had to get a horse to help me back with it.

I took in the horse races as promised in my last article as I happen you will understand the usual expense involved in same. The action is quite good of these race track as experts all realize to make considerations to it. The usual way of helping them out is by means of bets on I followed the action. You will find that on my expense slip as Commander's Chest notwithstanding. They was quite a crowd at the track but I doubt they was much interest in horses. Most of the citizens I observe was there on account the same having graduated. Most of the city business is in this grand stand during the winter season or is in addition, and the racers has it that place is on foot to add fifty more stables to same. As far as the results of the race was concerned I had my usual luck. One time I thought I had finally won only to find my horse was just getting in from a race before. I looked to the jockey as he says the horse need to work for the start clearing light, and didn't know should be to go to the left or right of the quarter mile post.

One trouble with the aviation business down here is that the fellows don't advertise themselves enough. I finally found one company making an account I had happened to be going by when a ship came in. This was the New Orleans Air Line as runs a ship and serves a hundred miles down the river. They has a number of Hres Sea-Shell as the pilots says the river is full of floating trees, brush, chicken bones and things as it is great fun trying to aim some. If this matter keeps up they will also have the hazard of floating ice. They was two Navy ships there too with the pilots trying to start their air-cooled engines. The Army never has any trouble with their air-cooled motors but I think it would be a good idea to offer a prize to any Navy man who can start one under three hours. My Very True—The Enticed Aviator

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AIRPORTS AND AIRWAYS

St. Louis, Mo.

By W. F. Alexander

With a bill now pending in the Board of Aldermen for an increase of Lambert-M. Louis Field and its necessary appurtenances to a municipal airport, important steps already have been taken to bring the field from its present inferior status, as far as accommodations for airplanes are concerned.

The outstanding event even at that distance was the purchase by Mayor Albert Bond Lambert, Gov. of St. Louis, of the 78 acres immediately adjoining the field on the north.

The tract will be added, as soon as the city appropriation is available, to the 316 acres that now form Lambert-St. Louis Field, which is also Mayor Lambert's property. The new property has a frontage of 3000 ft. on the Walnut right-of-way which will be an important feature to airplane companies operating at the field, since it will bring without shipping facilities to the very hangar doors.

Recently the field and the 78 acre addition were surveyed by eminent engineers who will make up estimates on the cost of installing flood and border lights, the fence to mark out the boundaries of the field so that night flying pilots need not fear planes down at night.

The 78 acre field will now belong to the Board of Aldermen, and virtually remove of former appropriation \$30,000.00. Of this amount \$20,000.00 is to be paid for an option on the

70 acre tract now owned by Mayor Lambert, the money representing a rental payment on the property and applicable as a first payment in the event the city decides to purchase it later.

True to his policy of encouraging flying with his own resources, Mayor Lambert has agreed to lease the present field, 316 acres, for \$1.00 a year. He has agreed to sell it for \$10,000, less than half its market value, if the city decides later to purchase the ground.

Moreover, the remaining \$10,000 of the appropriation is to be spent for grading the field, building roads and administrative buildings, and providing lighting facilities. Next November a \$1,000,000.00 bond issue proposed will be authorized to pay the costs for the purchase of the additional 78 acres, and its further equipment to make it one of the best fields for flying in the world.

To Use Revolving Beacon

The beaming made possible by the \$100,000 gift of Mrs. Adolphus Beach III, mother of "Coco" Lambert, one of the Lambert Field aviators, has been ordered from the General Electric Company. It is to be of the revolving type and its installation at the northwest corner of the field, is expected to be complete within a very short time.

"Coco" Lambert, who took to flying so enthusiastically

January 16, 1928

that he readily bought his own plane, a Ryan open cockpit model 1, with Whirlwind engine, has been elected a second lieutenant in the Thirty-fifth Division Air Corps, which has its headquarters at Lambert-St. Louis Field. This is said to have among its own quarters of the field a private "Lambert" hangar stand. The building in which the squadron is housed comprises office and recreation rooms and is expected to be a strong driving card for prospective recruits.

In a plan to fit a new building the squadron has two steel hangars at the north side of the field. Its greatest need is flying equipment. All the 11000 sq. ft. hangars have been destroyed under the War Department order and the squadron is waiting the delivery of the new Curtiss O-1H Falcons, which supersede the D-10 and Douglas O-2. Meanwhile the squadron still has six Douglas, two PT-13s and TW-3.

Want Army Candidates

Major E. Ray Wharton, commanding officer of the squadron, is seeking candidates to send to the Army flying school. Applicants for the Wharton, which covers eight months and includes instruction in every branch of military aviation—planes, attack, observation and bombardment, must be between 20 and 26 years old and must have had two years of college education or its equivalent. They will be rated as majors, with salary of \$7500 a month and will be provided with clothes and board. Upon completion of the course they will be commissioned second lieutenants in the assigned reserve and will also be likely candidates for National Guard commissions.

The air unit is also looking for recruits for its own organization. Applicants must be between the ages of 20 and 40 and of good character. When flying weather permits entrance

AVIATION

363

air work the enlisted men of the organization get many chances to ride as passengers in the unit's planes.

Poor weather during the early part of the winter has cut out work done in flight, but some emergency and line, as severe proportion, run up the tower the pilots spend around the tower of the office is long "ground flying" seasons.

Long Beach, Calif.

A revolving beacon, flood light equipment, and boundary lights have recently been installed at the Long Beach Municipal Airport. The field is now completely equipped for day or night flying and enjoys excellent flying weather throughout the year. W. J. Petrus, field custodian, is on the job 24 hours a day to provide service of every sort, including transportation, the field being less than two miles from the business center of Long Beach.

Earl L. Daugherty, former Long Beach aviator, has just returned to the field after six weeks of flying with the Naval Reserves at North Island, San Diego. He has just taken over the Southern California distributorship for the Leland-Page light, the demonstration plane having been flown here by Mr. Russell and Mr. Morris of the Leland-Page factory.

Hangar space at the Long Beach Municipal Airport is now occupied by Earl L. Daugherty, Al Harris, International distributor, Ray Carpenter who has both OS-5 and Watkinson equipped Travel Air biplanes, Joe Lewis, Lloyd O'Donnell, who flies a Waco 10 and Whirlwind Travel Air, and H. E. Rehbeck, whose hangar is now under construction in preparation for a Travel Air plane which he has ordered.

The contract has already been let for a row of Naval Reserve hangars along the north boundary of the field and Medical Airplane is now in possession the location of the main hangar and shops for their equipment to be located on the northeast corner of the field.

The Modern Pony Express

STEARMAN Mail planes are flying on the Varney Air Lines and the Colorado division of the Western Air Express. Each airplane is completing six thousand miles of strenuous flying every month.



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UNITED STATES AIR FORCES

Air Corps Bombardment Exercises

More than 60,000 lb. of high explosive bombs is expended monthly from the bombing racks of Army Air Corps planes in the biggest aerial land bombardment exercises launched in this country. These loadings, contrasted at no days, formations of bombardment planes dropping their deadly charges at steel and TNT on the Fox Den River bridge between Allentown and St. Cloud, N. C.

Scoring more than a mile and a half above the target, the crews of the bombardment planes sprinkled the bridge with a formidable assortment of high explosive aerial bombs. Included among the projectiles slated to level the Fox Den bridge a 2,500 lb. anti-tank, 65, 200 lb. incendiary, 35, 100 lb. incendiary and 15, 100 lb. bombs.

In addition to serving as a target for Army bombers, the bridge served as a platform in tests of shells to determine the effect of artillery fire and also was torn down by Army engineers.

This demolition phase with a quarter million dollars' reinforced concrete bridge in the baroque, has been made possible through construction of a dam which will cause the water to submerge the bridge and make it a menace to navigation. The War Department, seeing an opportunity to put some of its most-advanced theories to the test, obtained permission from local authorities to demolish the bridge with shells, mines and aerial bombs.

Headquarters for the demonstration were under the command of Brig. Gen. Albert F. Bowley, at Fort Benning, V. G., where 10 bombardment planes from Langley Field and other Army aircraft, including observation and photographic planes, are now being concentrated. Fort Benning is about 75 miles by air from the scene of destruction, a distance which the bombardment planes covered in less than an hour. Assistant Secretary of War for aviation, P. T. Hughes, and Major Gen. James E. Forster, Chief of Air Corps, were among those who witnessed the tests.

Pan-American Plane for Smithsonian

The "San Francisco", last airplane to make a complete circuit of the Western Hemisphere, recently passed its way into its last hangar at the Smithsonian Institution.

Shore of the wings, the engine cockpit, the speedometer through space model fitter, the large empennage Army Air Corps plane, which flew in the formation that carried the goal of this country in Latin-American republics last winter, will be added into the airplane exhibit at the institute where it will be reconstructed to stand as another monument to American achievement.

Surrounding it will be other Army planes, that have made history, some of them over the battlefields of Europe, others in punishing campaigns of great value to aviation progress. The group includes the first Army plane built by the Wrights in 1908; the T-3 that made the transcontinental one-day flight, the "Cherokee" of the 1924 Round-the-World flight and the B-17 Curtiss Army bomber.

The "San Francisco" was flown by Capt. Ira C. Eaker and Lt. Col. Max S. Fawcett. It is the only plane which has flown in every country in the Western Hemisphere: 21 Republics in Central and South America, the United States, the Dominion of Canada, and the usual possessions of England, France and the Netherlands. It has been flown approximately 450 hours and has put over 48,000 miles.

Pleased to have the "San Francisco" placed in the Smithsonian Institution was made soon after completion. It is

January 16, 1933

January 16, 1933

For training flight, but authorization was deferred because War Department officials desired to get the full benefit of the entire line of the plane which has been exposed to exceptional conditions—over 6,000 hours in the air. For four months it underwent a longer and was the whole ground of war, weather and noise.

Three Yearly Courses in Aviation Medicine

Recent changes in the course of flying instruction at the Air Corps Primary Flying School, Brooks Field, Tex., have necessitated certain changes in the course of instruction conducted by the School of Aviation Medicine. Hereafter there will be three three courses conducted annually each of three months' duration which will begin on Jan. 5, May 3 and Sept. 3 respectively. The short basic course herebefore conducted for six weeks will be discontinued. Each three month course will be divided into two periods. The first period of each course will be of six months' duration and will be devoted to theoretical instruction; the last period will be of one month's duration and will be spent in practical work. An officer will act as accepted as a condition to make the physical examination for flying will be held here and the practical instruction given in the second period.

The purpose of the first period is to instruct and train medical officers in the theoretical work of a flight surgeon. The duration of this course is two months, beginning on Jan. 5, May 3 and Sept. 3 of each year. The program provides for the following curriculum:

Two-semester	Aviation Medicine	60
Two-semester	Aviation Medicine	60
Two-semester	Aviation Medicine	60
Two-semester	Aviation Medicine	60
Two-semester	Aviation Medicine	60

The scope of the second period, which is of one month's duration, beginning March 5, July 1 and Nov. 5 of each year, will be the instruction of medical officers in the practical application of the curriculum for flight. The program for this course remains at the following instruction:

Two-semester	Aviation Medicine	60
Two-semester	Aviation Medicine	60
Two-semester	Aviation Medicine	60
Two-semester	Aviation Medicine	60
Two-semester	Aviation Medicine	60

Captain Gray's Balloon Basket for Museum

In reply to a letter from the Secretary of the Smithsonian Institution in which it was stated that the United States National Museum desired to obtain, as an addition to its aeronautic collection, the balloon basket recently used by Capt. Thomas C. Gray in the first flight during which he set his life, the Secretary of War indicates that the War Department has no objection to furnishing the balloon basket and the instruments used in connection with the flight, except two altimeters, one chronograph and one 50,000 ft. altimeter, which are required for further experimental development work.

Will Eliminate Low-Flying Danger

The creation of the War Department has been called to the attention of the danger to ground troops resulting from low-flying airplanes during maneuvers in which, under the terms of the Corps regulations, it is the duty of the pilot to fly low. The War Department participation in such maneuvers will be increased, the Chief of Air Corps has been directed to prepare regulations which will eliminate any danger to ground troops from low flying planes. As the present time the Army has been set to specific limit as to the distance at which an airplane may fly over a ground troop, leaving the determination of the distance to the judgment of each pilot.

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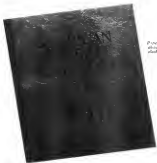
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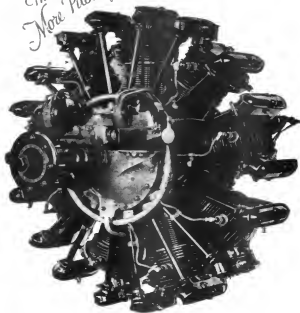
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